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Scientific Note

Macrovelia hornii Uhler, a Cave-inhabiting Semiaquatic Bug (Hemiptera: Macroveliidae)[1]

Macrovelia hornii Uhler is a widespread semiaquatic bug, previously recorded from Oregon, California, New Mexico, Nebraska to North Dakota, and Baja California, Mexico (Polhemus and Chapman *in* Menke (ed.), 1979, Bull. Calif. Insect Surv., 21:47). In California, the insect is found throughout the state, inhabiting stream margins, springs, and seep areas, usually where there is abundant vegetation (see Polhemus and Chapman for additional details).

During a recent trip to Redwood Canyon, Kings Canyon National Park, Tulare County, California, to explore caves for terrestrial arthropods, Thomas S. Briggs, Darrell Ubick, and I discovered *M. hornii* on the walls of Cedar Cave and Lilburn Cave. The bugs were most numerous in Cedar Cave (also known as Deep Cave), where they were first discovered on 16 August 1984. They occurred only in the twilight zone of the cave, from 2.5 m to 7.5 m from the entrance. The cave was cool, approximately 7°C (relative humidity 89%), compared with the estimated 26–29°C outside temperature at 1500 hours, and there was no standing or running water anywhere nearby. When four females were taken from the cave to the outside, they became torpid, an apparent response to the drastic change in temperature. The first collection yielded 1 male and 14 females; the second collection on the next day, 1 male and 4 females. In Lilburn Cave, 1 male and 3 females were collected. All individuals collected or seen were macropterous adults; no nymphs or brachypterous adults were present. No macroveliids were found in the third cave explored, May's Cave (also known as May's Hole).

We were not able to find any *M. hornii* individuals outside the caves in the immediate area during the short time we were there, but I would expect them to be present along the margins of Redwood Creek, which runs through Redwood Canyon. A female was found in a vegetated seepage hillside by D. Ubick on 17 August 1984 at 0.9 mile (0.5 km) south of Giant Forest Village, Sequoia National Park, Tulare County. This collection stop is 10.5 airline miles (17.5 km) due southwest of the Redwood Canyon area. The bug is also known from nearby Potwisha and Crescent Meadow; these records were taken from specimens in the collection of the California Academy of Sciences. Again, all these specimens are macropterous adults.

This cave record is the first for *Macrovelia hornii,* and it is the second for a semiaquatic bug in the Nearctic Region. Reddell (1970, Texas J. Sci., 22(1):47–65 and *in litteris*) recorded specimens of *Microvelia* sp. (Veliidae) from a pool at the bottom of Balcones Sink in Texas. Several species of *Microvelia* have been reported from caves in Africa, Central America, and other parts of the world. Gagné and Howarth (1975, Pacific Insects (1974), 16(4):399–413) described an apterous species *Speovelia aaa* Gagné and Howarth (now placed in *Cavaticovelia*), the world's first true troglobitic heteropteran, and recorded a species of troglophilic *Mesovelia* from Hawaiian lava tubes. Recent surveys of neotropical Mexican caves

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revealed that Hemiptera in caves are represented by mostly trogloxenes and occasional troglophiles (1971, 1973, Assoc. Mex. Cave Stud. Bull., 3–5).

Macroveliids should not have been unexpected in caves since they tend to avoid light: they tend to rest under overhanging rocks or on vertical dark sides of stones (see Polhemus and Chapman). The presence of only adult macropters suggests that *M. hornii* are temporary inhabitants of caves. Until collections are made at other times of the year, no conclusions can be positively drawn regarding their permanent residency and reproduction in caves. However, Cedar Cave was discovered only recently in the early 1970's. At that time, the cave was completely filled with fluvial gravel deposits, indicating that Redwood Creek was higher than it is now. Through several excavations by spelunkers, the cave was first enlarged in 1974 and lengthened to the present length of about 370 meters of passage. Therefore, the bugs must have colonized the cave after the discovery of the cave. Since the specimens collected do not have cave-adapted modifications, the insects probably flew in from outside of the cave and did not colonize the twilight zone of the cave from within, i.e., from the Lilburn Cave system which probably has interstitial connections with Cedar Cave.

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